Foundations of Algebra

Unit 5: Linear Functions

Practice

Name: Key

Date: _____ Block: _____

Day 5 – Slopes Applications
Practice Assignment

1. How many calories do you burn per minute on the exercise bike?

Number of Minutes on an Exercise Bike	Total Number of Calories Burned
15	180
30	360
45	540
60	720

+15 minutes ↓   ) +180 calories

$$\frac{\Delta y}{\Delta x} = \frac{180 \text{ calories}}{15 \text{ minutes}} = \frac{12 \text{ calories}}{1 \text{ minute}}$$

2. Carmen is selling pies at the cherry festival to raise money for her local volunteer fire department. She sells 85 pies for $12 each. The supplies to make the pies cost Carmen $340. What is the unit rate of profit she made per pie?

85 pies × $12 = $1020
money made

$1020 − $340 = $680 profit
money made   expenses

$$\frac{\$680 \text{ profit}}{85 \text{ pies}} = \boxed{\frac{\$8}{1 \text{ pie}}}$$

3. Rosa is ordering a submarine sandwich from the corner deli. The deli charges $6.25 for a 7-inch sub. Some additional toppings cost extra. Rosa's sandwich with two extra toppings costs $7.75. What is the cost per additional topping?

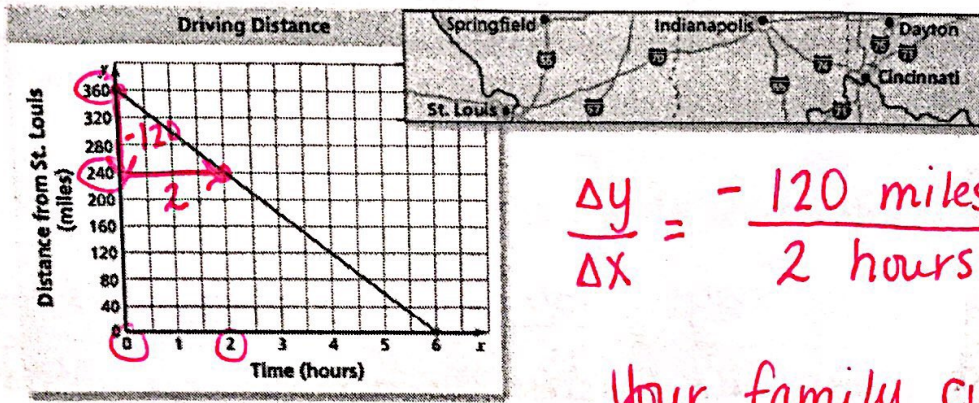7.75 − 6.25 = $1.50 for two toppings
total   Basic cost

$$\frac{\$1.50}{2 \text{ toppings}} = \boxed{\frac{\$0.75}{\text{topping}}}$$

4. Jamal is shopping with a gift card he received for his birthday. After he purchases two T-shirts the gift card balance has dropped from $50 to $20.02. What is the unit rate of the cost per T-shirt?

50 − 20.02 = $29.98 for 2 shirts

$$\frac{\$29.98}{2 \text{ shirts}} = \boxed{\frac{\$14.98}{1 \text{ shirt}}}$$

Scanned with CamScanner

5. You and your family are traveling from St. Louis to Cincinnati. What is the slope and what does it represent in this situation?

Driving Distance

(Graph: Distance from St. Louis (miles) vs Time (hours), with line descending from 360, marked -120 over 2)

$$\frac{\Delta y}{\Delta x} = \frac{-120 \text{ miles}}{2 \text{ hours}} = \frac{-60 \text{ miles}}{\text{hour}}$$

Your family cuts 60 miles every hour from the distance remaining.

6. The following graph represents Michelle's bank account balance each month. What is the slope and what does it represent in this situation?

(Graph: Bank Balance ($) vs Months, line descending from 800, marked -200 over 4 months)
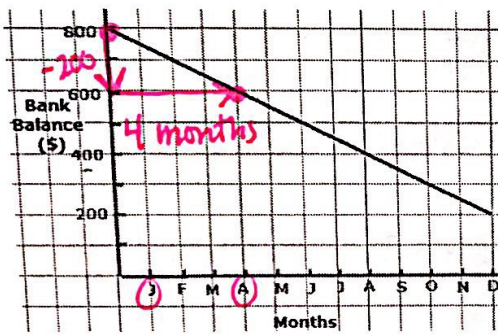
$$\frac{\Delta y}{\Delta x} = \frac{-\$200}{4 \text{ months}} = \frac{\$-50}{1 \text{ month}}$$

Michelle loses $50 every month from her bank account.

7. Calculate the slope from the table. Explain what the slope means in real world terms.

Distance (miles)	Charge (dollars)
5	12.75
8	18.00
12	25.00
14	28.50

+4 miles, +$7

$$\frac{\Delta y}{\Delta x} = \frac{\$7.00}{4 \text{ miles}} = \frac{\$1.75}{1 \text{ mile}}$$

It costs $1.75 to go 1 mile.